

REMARKS

Claims 17-21 are pending in the subject application. Claim 17 has been amended to correct typographical errors. The amendment of claim 17 is supported by the specification at page 27, lines 3, 11, and 20.

Claim Rejections – under 35 U.S.C. 103

Applicants respectfully traverse the obviousness rejection of claims 17-21 over Kumano et al. (US 5,783,079) in view of Marino et al. (US 4,638,168), Taketani et al. (US 4,260,652) and admissions of the Specification on pages 13-14. The Office Action relies on the process of producing a polysulfone porous hollow fiber membrane of Kumano and relies on Marino et al. for the disclosure of the measurements of hollow fiber, polyamide or polysulfone material thickness by measuring adsorption intensities in any wavelength, including infrared. The Office Action further relies on Taketani et al. for teaching the determination of thicknesses of the separating polyamine layer and substrate polysulfone layer with controlled layer thicknesses and the use of infrared adsorption spectroscopy to measure polymer concentrations and chemical makeup. Applicants contend that the obviousness rejection should be withdrawn because Kumano et al., Marino et al. and Taketani et al. teach or suggest maintaining the concentration of the multifunctional amine solution constant, or obtaining a membrane having a high sucrose removal.

The claimed invention is directed to a process for producing a composite semipermeable membrane with excellent water permeability, high separation performance, and particularly excellent organic substance removal performance. Applicants have found that in order to achieve a semipermeable membrane with these characteristics, the concentration of the multifunctional amine in an aqueous solution, with which the polysulfone porous hollow support membrane is brought into contact, should be kept constant during membrane production. (See page 17, line 11- page 18, line 16, and page 26, lines 12-14 of the specification). As a result of this improved production process, a uniform and stable composite hollow fiber membrane without defects is obtained.

Neither Kumano, Marino nor Taketani teach maintaining a constant concentration of the multifunctional amine solution during production of the membrane. The claimed process of producing a membrane has substantial advantages as compared to the membrane disclosed in Kumano. For example, the process of the invention produces a membrane, in contrast to that of Kumano, which exhibits high rejection of sucrose and is stable in terms of sucrose removal and water permeability.

Furthermore, in contrast to the membrane produced by the claimed process, Kumano does not disclose a membrane with excellent sucrose removal. Further, Kumano does not disclose the use of the membrane for separating glucose or dextrose, contrary to what is asserted in the Office Action.

As shown in Table 1 of the Declaration filed October 17, 2001 (in the prosecution of the parent application), a courtesy copy attached hereto as Exhibit A, without controlling the concentration of the amine solution during the manufacturing of the composite membrane, one would not obtain a membrane with high sucrose removal. Moreover, the membranes prepared according to Kumano et al. do not have the significantly improved sucrose removal capabilities of the claimed process. Additionally, the membranes produced following the method taught in Kumano are not as stable in terms of sucrose removal efficiency and water permeability as compared to the membranes produced in the claimed process whereby the concentration of the multifunctional amine solution is held constant during production.

Kumano does not disclose a process for producing a semipermeable membrane with high sucrose removal as claimed nor does it disclose or suggest a stable membrane.

Further, the teachings of Marino and Taketani along with pages 13 and 14 of the instant specification do not remedy the deficiencies of Kumano. Marino merely discloses a method for determining the morphology of a polymeric hollow fiber. Taketani does not teach a process for producing a semipermeable membrane wherein the concentration of the multifunctional amine solution is constant, nor teach or suggest obtaining a membrane having both high chloride and sucrose removal. The disclosures in pages 13 and 14 of the instant specification concern the invention, not admissions of prior art.

As such, Kumano et al., in view of Marino et al., Taketani et al. and pages 13 and 14 of the instant specification do not render the present invention obvious. Accordingly, Applicants respectfully request withdrawal of this rejection.

CONCLUSION

In view of the above, applicants submit that this application is in a condition for allowance. The Examiner is encouraged to call the undersigned if there remains any minor issue that can be resolved with a telephone interview.


In the event that this paper is deemed not timely, applicants petition for an appropriate extension of time. The petition fee and any other fees that may be required can be charged to Deposit Account No. 11-0600 referencing Docket No. 10089/22.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,

KENYON & KENYON

Dated: 9/22/05


Teresa A. Lavenue
Reg. No. 47,737

1500 K Street, N.W.- Suite 700
Washington, DC 20005
Telephone: 202/220-4258
Facsimile: 202/220-4201